


Collection and Presentation of Bridge Data

Transportation Planning Branch		Approved: February 12, 2007 Revised: May 9, 2012 Version 3
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Purpose

The purpose of this procedure is to provide a consistent methodology for gathering information about the status of any bridges in the study area that have been classified as structurally deficient and/or functionally obsolete, and presenting that information. The data will be used in the Identify Alternatives procedure. (Future link) This will ensure coordination between the bridge management system and the Comprehensive Transportation Plan (CTP).

Background

Bridges are an important element of a highway system. If a bridge is deficient or obsolete, it can decrease the efficiency of the entire transportation system. Therefore, bridges must be constructed and maintained to the same, or higher, design standards as the rest of the transportation system and must be inspected regularly to ensure the safety of the traveling public. The NCDOT Structures Management Unit inspects all bridges in North Carolina at least once every two years. A sufficiency rating for each bridge is calculated and establishes the eligibility and priority for replacement or rehabilitation. Bridges having the highest priority are replaced as federal and state funds become available. A bridge is considered deficient if it is either Structurally Deficient or Functionally Obsolete. A bridge at least 10 years old is considered structurally deficient if it is in relatively poor condition due to deterioration or has insufficient load-carrying capacity due to the original design. The bridge is considered functionally obsolete if it is narrow, has inadequate under-clearances, has insufficient load-carrying capacity, is poorly aligned with the roadway, or can no longer adequately serve existing traffic. A bridge must be classified as deficient in order to qualify for federal replacement funds. In addition, the bridge must have a certain sufficiency rating to qualify for these funds. To qualify for replacement, the sufficiency rating must be less than 50%; for rehabilitation, the sufficiency rating must be less than 80%. NCDOT Bridge Locations shapefile is quarterly updated on the NCDOT GIS Data Distribution page.

Responsibility

It is the responsibility of the **Project Engineer (PE)** to create standardized tables and maps in the [CTP Report](#) based on the appropriate data from the NCDOT Bridge Locations shapefile.

Policy, Regulatory, and Legal Requirements

No specific policy exists for the collection of bridge data.

Scheduling and Time Constraints

The collection and needs assessment of bridge data should be completed before the deficiency analysis is conducted on the highway system as a whole, as part of the CTP Study.

Procedures

Bridge data is collected for use in creating standardized tables and maps in the CTP Report and assists in the deficiency analysis.

Data Collection Procedure

The project engineer will follow the steps below to properly collect bridge data.

Step	Action
1	Download the statewide NCDOT Bridge Locations shapefile (including the associated reference files) from the CTP GIS Data Layers spreadsheet (S:\Shared\TPB Reference\Comprehensive Transportation Plan\CTP GIS Data Layers.xls). Save these files to the CTP project folder on your hard drive.
2	Open ArcMap by clicking on the Start > Programs > ArcGIS > ArcMap. Click on a new empty map. Click on the button that says Add Data, which looks like a plus sign with a yellow background. Scroll in the Look in: window to your hard drive for the bridge shapefile.
3	The downloaded shapefile has statewide bridge coverage and should be clipped to your county or specific study area.
4	Go to layer Properties > Definition Query and modify selection for your county ("COUNTY" = 'your county name' AND "STRUCT_DEF" = 'SD') OR ("COUNTY" = 'your county name ' AND "FUNC_OBSOL" = 'FO').
5	Right click on the bridge shapefile > Data > Export Data features. Save exported shapefile to the CTP project folder on your hard drive.
6	Open attribute table for the exported bridge shapefile to review the Structurally Deficient or Functionally Obsolete bridges.

Table Preparation Procedure

After the deficiency analysis has been completed and the engineer has determined which bridges are going to be improved or replaced, the engineer should prepare a table with the results for inclusion in the CTP Report. As the CTP is developed, this information will be used to ensure consistency between the CTP and the Bridge replacement program. The project engineer will follow the steps below to properly produce a data table.

Step	Action
1	Open Appendix G of the CTP Report in Microsoft Word.
3	Fill your data into the cells of the Deficient Bridges table (see example below).

Table X - Deficient Bridges				
Bridge Number	Facility	Feature	Condition	Local ID
1	I-40 Eastbound	Catawba River	Functionally Obsolete	I-9999
46	NC 115	Rocky Creek	Structurally Deficient & Functionally Obsolete	NC 115 widening
66	SR 1892	Patterson Creek	Structurally Deficient	
147	SR 1892	Rocky Creek	Structurally Deficient	

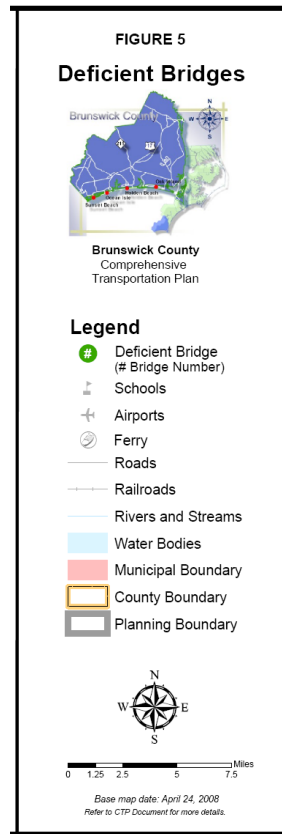
Map Preparation Procedure

After the deficiency analysis has been completed and the engineer has determined which bridges should be improved or replaced, prepare a map showing the locations of all the deficient bridges on the network for inclusion in the CTP Report. The project engineer will follow the steps below to properly produce a map.

Step	Action
1	Open a new map in ArcMap. Note: It is suggested that if already completed, save one of the CTP map such as the Adoption Sheet as the Deficient Bridges map and then start work on it. See the “Develop CTP Maps” procedure.
2	To add layers to the Bridges Map, follow the instructions listed in the “Develop CTP Maps” procedure. Add the bridge layer you clipped for your planning area.
3	Label deficient bridges in your planning area using the symbology in the most current CTP Style File which is located at: S:\Shared\TPB Reference\Comprehensive Transportation Plan\CTP Map Templates folder and Guidance from ArcGIS Frequently Asked Questions (3.6 Labeling Crash and Bridge Locations) .

4

Insert completed map in the appropriate location in Chapter 1 of the [CTP Report](#). A sample legend is shown below.



Warnings and Precautions

None

Resources and Tools

- Adobe Acrobat Reader
- ArcCatalog (ESRI software)
- ArcMap (ESRI software)
- [CTP Process Overview](#)
- [Minimum CTP Standard Report Template](#)
- [Develop CTP Maps](#) procedure
- [ArcGIS Frequently Asked Questions](#)
- [NCDOT GIS Data Distribution web site](#)
- S:\Shared\TPB Reference\Comprehensive Transportation Plan\CTP GIS Data Layers.xls
- S:\Shared\TPB Reference\Comprehensive Transportation Plan\CTP Map Templates folder

Contacts

- For suggestions to change this procedure contact: Elena Talanker 919-707-0911

- For questions about performing this procedure contact: Linda Dosse 919-707-0973

Glossary

For a complete listing of terms, definitions and acronyms, go to the [Master Glossary](#).

User Access

Intended for NCDOT Internal Use Only, but not exempt from the public records access requirements

Flowchart

None

Record of Revision

Version	Section Affected	Description	Effective Date
2	Procedures	Incorporates process improvement changes and updates hyperlinks.	03/01/2010
2	Contacts	Changed contact for questions on changing procedure	03/01/2010
2.1	Request letter	Updated request letter letterhead	06/21/2010
3	Procedures	Due to obtained Bridge locations GIS layer with full attributes, request was omitted and procedure simplified	05/9/2012